CLAIMS

What is claimed is:

1. A vector for the surface expression of antibiotics, which comprises:

one or more than two genes selected from the group consisting of pgsB, pgsC and pgsA, said genes encoding a poly-gamma-glutamate synthetase complex; and

a gene encoding an amphiphilic peptide antibiotics with antibacterial, antifungal and anticancer activities.

2. The vector according to claim 1, wherein said pgsB, pgsC and pgsA genes have the base sequences described in SEQ ID NO: 1, SEQ ID NO: 2 and SEQ ID NO: 3, respectively.

3. The vector according to claim 1, wherein the vector contains the pgsA gene among the genes encoding the poly-gamma-glutamate synthetase complex.

4. The vector according to claim 1, wherein the amphiphilic peptide antibiotics with antibacterial, antifungal and anticancer activities has an identity with the peptide P5 that is encoded by the base sequence of SEQ ID NO: 4.

5. A vector pHCE1LB:pgsA-P5 for the surface expression of antibiotics, which expresses antibiotics on the surface of gram-negative and gram-positive bacteria.

6. A microorganism transformed with the vector of claim 4.

7. *E. coli* (KCTC 10350BP) transformed with the vector pHCE1LB:pgsA-P5 of claim 5.

8. A lactic acid-forming bacteria transformed with the vector of claim 4.

9. A lactic acid-forming bacteria transformed with the vector pHCE1LB:pgsA-P5 of claim 5.

10. A method for producing lactic acid-forming bacteria having peptide antibiotics

P5 expressed on their surface, which comprises the steps of transforming lactic acid-forming bacteria followed by culturing said transformed lactic acid-forming bacteria of claim 8.

11. A pharmaceutical composition and suspension of the same for antibacterial, antifungal or anticancer application, which comprises, as an active ingredient, the lactic acid-forming bacteria produced by the method of claim 10 and having the peptide antibiotics P5 expressed on their surface.

12. The pharmaceutical composition according to claim 11, wherein said active ingredient is heat-treated.

13. The vector according to claim 1, wherein said amphiphilic peptide antibiotics with antibacterial, antifungal and anticancer activities has an identity with peptide Anal3.

14. A vector pHCE1LB:pgsA-Anal3 for the surface expression of antibiotics, which expresses the antibiotics on the surface of gram-negative and gram-positive bacteria.

15. A microorganism transformed with the vector of claim 13.

16. *E. coli* (KCTC 10348BP) transformed with the vector of claim 14.

17. A lactic acid-forming bacteria transformed with the vector of claim 13.

18. A lactic acid-forming bacteria transformed with the vector pHCE1LB:pgsA-Anal3 of claim 14.

19. A method for producing lactic acid-forming bacteria having peptide antibiotics Anal3 expressed on their surface, which comprises the steps of transforming lactic acid-forming bacteria and culturing said transformed lactic acid-forming bacteria of claim 15.

20. A pharmaceutical composition and suspension of the same for antibacterial, antifungal and anticancer applications, which comprises, as an active ingredient, the lactic acid-forming bacteria produced by the method of claim 19 and having the peptide antibiotics Anal3 expressed on their surface.

21. The pharmaceutical composition according to claim 20, wherein the active ingredient is heat-treated.

22. The vector according to claim 13, wherein said peptide Anal3 is encoded by the base sequence of SEQ ID NO: 6.